



Norman H. Bangerter

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State of Utah

DEPARTMENT OF HEALTH

DIVISION OF ENVIRONMENTAL HEALTH

288 North 1460 West

P.O. Box 16690

Salt Lake City, Utah 84116-0690

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MINERALS PROGRAM
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MAY 03 1991

DIVISION OF
OIL GAS & MINING

April 30, 1991

Mr. Grant A. Pinkerton
North Lily Mining Company
P.O. Box 421
Eureka, UT 84628

RE: Construction Permit
Pad Extensions, Phases I-III

Dear Mr. Pinkerton:

We have completed our review of the plans and specifications for the construction of additional expansions of the initial heap pad, in Phases I through III, prepared by your consultants Dames and Moore, and submitted to us on April 11, 1991.

The plans and specifications as submitted, comply with the *Utah Water Pollution Control Rules, (R448, Utah Administrative Code)*. A **Construction Permit** is hereby issued as constituted by this letter, subject to the following conditions:

1. *Any revisions or modifications to the approved plans and specifications must be submitted to the Bureau of Water Pollution Control (the Bureau) for review and approval, before construction or implementation thereof.*
2. *The approved facilities must not be placed in service unless the Bureau has made a final inspection, and has authorized in writing to place the constructed facilities in service.*
3. *Phase III of the project must not begin without increasing the capacity of the overflow pond. Design for such an increase must be submitted to us for review and approval.*
4. *The loaded ore height shall not be greater than 50 feet.*
5. *Requirements for records and reports of construction quality assurance tests, operations, monitoring, reduction, and shut-down of operations shall be consistent with previous phases of the work as initially described in the construction permit letters dated October 27, 1990, and April 13, 1988.*

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6. *Two new open channels for leachate flow shall be constructed for this project as described herein.*

This construction permit will expire on *April 30, 1992*, unless plans and specifications have been resubmitted and the construction permit is reissued. It is expressly understood that each phase of this project is considered independent with respect to this permit, in that each phase must be under substantial continuous construction by the expiration date or the permit will expire for that phase of the project, unless plans and specifications have been resubmitted and the construction permit is reissued. This permit does not relieve you in any way of your obligations to comply with other applicable local requirements, or those stated in the permit issued under the *Utah Pollutant Discharge Elimination System*. You may contact Mr. Bruce Hall of the Central Utah District Health Dept. at 896-6974 for further assistance in this regard.

The project consists of constructing up to three expansions contiguous to the existing pad. An initial expansion to the heap leach pad was constructed in 1989. This phased expansion is very similar in design to the initial expansion project. The basic pad strata consists of a three foot thick protective layer of fine grained ore above a 30-mil polyvinyl chloride (PVC) flexible membrane liner (FML). Below the FML will be a 12-inch thick clay layer, installed in two 6-inch lifts, at a standard density of 95 percent, with a maximum hydraulic conductivity of 1×10^{-7} centimeters per second (cm/sec) or less. Below the clay, a geotextile of 1×10^{-3} cm/sec minimum hydraulic conductivity or more under loading, and 40-mil minimum uncompressed thickness.

Below the geotextile there will be a 4-inch thick layer of leak detection media, with a minimum tested hydraulic conductivity of 4×10^{-2} cm/sec or more, and a maximum capillary rise of 0.25 to 0.50 inches or less. At the bottom of the media, slotted leak detection pipes will be installed at 20-foot centers, placed in trenches of 1-inch depth. Dams shall be placed at 20-foot centers along the axis of the leak detection pipe trenches. The leak detection pipe shall be covered with geotextile at such locations to prevent clay infiltration into the slotted pipes. Below the leak detection pipe shall be an engineered base of at least 6-inch thickness, compacted at 95 percent standard density, with maximum hydraulic conductivity of 1×10^{-6} cm/sec or less. The 4-inch leak detection sump riser pipes shall not be perforated as in the past, but shall be solid, connecting to each solid 1-inch leak detection pipe manifold line.

There will be two new open channels for leachate flow as a result of this project. The perimeter open channels on the western end of Phase I, and the southern end of Phase II. There will be a composite cover consisting of a double FML, with a 40-mil geotextile between the layers. The composite channel cover shall have detection sumps containing leak detection media, connected to a riser pipe. These sumps shall be sandwiched between the two FML's, with a geonet just above the media and geotextile just below the media. The composite channel liner material shall be trench anchored, similar to previously constructed membrane FML liners.

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These shall be placed midway and at the end of the channel length. These sumps and ports are to be installed in addition to the pad only, leak detection sump and ports.

When these phases are loaded with ore for leaching, an easterly part of the northern dike of the existing pad shall have leak detection ports covered by ore. These leak detection sumps shall continue to be operated by installing electronic leak detection contacts with a water depth sensitivity of approximately 1-inch. These contacts shall be connected to sensor wiring, which will be installed in 1-inch polymer pipe, which shall be within a 4-inch conduit routed to a liquid sensor control panel. These detectors shall be tested and logged for conductance on a daily basis.

A set of approved plans and specifications is returned herewith bearing an imprint of our construction permit stamp. The stamped set must be kept available for examination and inspections to be conducted by the Bureau, or for resolution of any conflicts or discrepancies that may arise during construction or installation.

Please advise us of the beginning of each phase of the construction. This will enable us to schedule periodic inspections. We request that a copy of record drawings be provided after the final inspection has been conducted by the Bureau, and completed works have been placed in service. This will enable us to keep our information accurate.

If we can be of further assistance, please contact Mr. David A. Rupp of my staff.

Sincerely,

Utah Water Pollution Control Committee



Don A. Ostler, P.E.
Executive Secretary

DR:rvg

Attachment: Construction Permit Letters

cc: Roger Foisy
Central Utah District Health Dept.
John F. Wallace, Dames and Moore Consultants, SLC
Wayne Hedberg, DOGM

N: nlmccep.1-3

FILE: North Lily Mining Co. Industrial



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MAY 03 1991

DIVISION OF
OIL GAS & MINING

Mr. Grant A. Pinkerton
North Lily Mining Company
P.O. Box 421
Eureka, Utah 84628

Re: North Lily Mining
Tintic project
Construction Permit

Dear Mr. Pinkerton:

We have reviewed the revised plans and specifications for the expansion of the heap leach pad at the Tintic leach facility.

The project basically appears to comply with current design requirements and practices for heap leach facilities. A construction permit is hereby issued as constituted by this letter, subject to the following conditions.

- a. The 1 inch diameter leak detection pipe will be installed in a 1 inch deep groove cut into the leak detection base.
- b. The leak detection base material will have a permeability of 1.0×10^{-6} centimeters per second or less.
- c. The quality assurance standards for the leak detection base, leak detection media, secondary clay liner, primary liner (geomembrane) and process solution collection system for the first pad also apply to this heap leach pad extension.
- d. An approvable contingency plan, and operation and maintenance plan will be submitted to the Bureau of Water Pollution Control (The Bureau) within 30 days after the issuance of this permit.
- e. Inspections must be scheduled with the Bureau not less than three (3) days prior to commencing construction of the following:
 1. leak detection system
 2. secondary clay liner
 3. field seaming of the geomembrane

File
Industrial Wastewater
North Lily
Tintic

- f. The Bureau must be notified at least seven (7) days prior to completion of construction of these facilities so a final inspection can be arranged.
- g. Neutralization criteria for these facilities shall meet the standard specified in our construction permit dated 13 April 1988 for the original heap leach facility.
- h. Quality assurance documentation for the heap leach pad as described in C above must be submitted to the Bureau within Sixty (60) days of the completion of construction of the pad.
- i. All process piping will be routed inside the lined areas of the leach pad.

The extension to the heap leach pad consists of an area 600 feet wide and 300 feet long onto the south side of the existing pad. The liner system will consist of the following beginning at the top.

- a. Primary solution collection system will consist of the ore with 3 inch perforated pipe spaced fifteen (15) feet on center.
- b. Liner protection material consisting of three (3) feet of spent ore from the existing pad with a permeability of 1×10^{-6} centimeter per second or less.
- c. Primary liner consisting of 30 mil PVC beneath the heap and 40 mil OR PVC in the exposed areas surrounding the pad, on berms and on the spillway.
- d. Secondary clay liner consisting of a 12 inch 1.0×10^{-7} centimeter per second clay layer. The clay may be laid in a single 12 inch lift due to the numerous handling steps and blending procedures to adjust the moisture content of the clay.
- e. Leak detection media consisting of a geofabric overlying a 4 inch layer of 1×10^{-3} centimeter per second material containing less than 5 per cent minus 200 mesh material.
- f. Leak detection base consisting of 1 inch perforated pipe spaced 20 feet on center laid on 6 inches minimum of 1.0×10^{-6} centimeter per second or less material. The material shall be free from pockets of sand or gravel.

The peizometers required to monitor the process fluid head on the geomembrane will be deleted from this extension due to the 3 feet of 1×10^{-6} centimeters per second materials which protects the geomembrane.

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Construction of the heap leach pad authorized by this permit must be under substantial continuous construction within one (1) year of the date of this permit.

We are advising you that any increase in pH, lead, cadmium, cyanide or constituents with ground water quality standards or surface water above background level due to this project may cause the project to be listed on the national priority list of hazardous substance sites by EPA pursuant to the Comprehensive Environmental Response Compensation Liability Act (CERCLA).

All wastes not exempt under the mining exemption will need to be managed in accordance with Utah's Hazardous Waste Management Regulations (i.e. spent solvents, off specification acids and chemicals, and undesirable metals in the leach solutions, etc.)

By copy of this letter we are requesting the Division of Oil, Gas and Mining inspect the leak detection sumps of this facility during any site visits.

Please call Mr. Mack Croft or Mr. Charlie Dietz of our staff at 538-6146 if there are any questions.

Sincerely,

Water Pollution Control Committee



Don A. Ostler, P.E.
Executive Secretary

CGD:pb

cc: Mr. Roger Foisy, State Health Department, Richfield
Mr. Wayne Hedburg, Oil, Gas and Mining
Mr. Bruce Hall, Central Utah District Health Dept.

GRANTA.P